REMARKS

By this response, claims 1, 2, 5, 7, 17, 18, 21 and 23 are cancelled, and claims 3, 4, 6, 8, 9, 11, 12, 15, 19, 20, 22, 24, 25, 27, 28 and 31 are amended. Thus, claims 3, 4, 6, 8-16, 19, 20, 22, and 24-32 are active for examination. Claims 3, 4, 6, 8, 9, 11, 19, 20, 22, 24, 25 and 27 are rewritten in independent form. Adequate descriptive support for the amendment can be found in the specification. No new matter has been introduced.

The Office Action dated July 30, 2002 rejected claims 1-9, 11, 14, 17-25, 27 and 30 under 35 U.S.C. §103(a) as being unpatentable over January (U.S. Patent No. 5,675,515), and objects to the specification and claims 5, 9, 12, 15, 21, 25, 28 and 31 for formality reasons. The Examiner indicates that claims 10, 12, 13, 15, 16, 26, 28, 29, 31 and 32 are allowable. The rejection and objections are respectfully traversed in light of the remarks and amendment presented herein.

REJECTION AND OBJECTIONS OF CLAIMS 1, 2, 5, 7, 17, 18, 21 ARE NOW MOOT

By this response, claims 1, 2, 5, 7, 17, 18, 21 and 23 are cancelled. Thus, the objections and rejection of the claims are now moot.

OBJECTIONS TO THE CLAIMS AND SPECIFICATION ARE ADDRESSED

The Office Action objected to the specification and claims 5, 9, 12, 15, 21, 25, 28 and 31 for containing possible clerical errors.

The Examiner felt that that the limitation "the distance of a line passing adjacent a first of the right wheels and perpendicularly from the wheel track passing through the first right wheel to the wheel track passing through a second of the right wheels" in

claims 5 and 21 needs wording improvements. By this amendment, claims 5 and 21 are cancelled. Claims 6 and 22, depending on claims 5 and 21 respectively, are rewritten in independent form including every limitation of claims 5 and 21 respectively. The limitation identified by the Examiner has been amended as "the right wheel base being defined as the distance of **a line** passing adjacent a first right wheel and perpendicularly **from** the wheel track passing through the first right wheel **to** the wheel track passing through a second right wheel," to improve wording.

By this amendment, the specification and claims 9, 12, 15, 25, 28 and 31 are amended to correct the informalities as required by the Examiner. The objections are respectfully traversed.

REJECTION OF CLAIMS 3, 4, 6, 8, 9, 11 14, 19, 20, 22, 24, 25, 27 AND 30 IS TRAVERSED

Claims 3, 4, 6, 8, 9, 11 14, 19, 20, 22, 24, 25, 27 and 30 were rejected as being unpatentable over January. The obviousness rejection is respectfully traversed because January cannot support a prima facie case of obviousness.

A *prima facie* case of obviousness under 35 U.S.C. § 103 requires three criteria be met. First, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Second, there must be some suggestion or motivation in the references themselves to modify the reference or to combine reference teachings. Third, there must be a reasonable expectation of success for the modification or combination of references. Further, the teaching or suggestion to make the modification or combination of prior art and the reasonable expectation of success must both be found in the prior art,

and not based on Applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). The teachings, motivations or suggestions to combine references must be based on objective evidence of record and cannot be resolved on subjective belief and unknown authority. *In re Lee*, 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002). Additionally, there must be particular finding as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge to the claimed invention to combine or modify references. *In re Kotzab*, 217 F.3d 1365, 55 U.S.P.Q.2d 1313 (Fed. Cir. 2000). The cited references, however, do not meet these requirements.

Claim 3, as amended, specifies a step of "comparing an angle between the calculated front wheel track and the calculated rear track to a specified range for the angle between the calculated front wheel track and the calculated rear track." In rejecting claim 3, the Examiner contended that January discloses the same features in column 16, lines 40-42). Applicants respectfully disagree. In the section cited by the Examiner, what January describes is calculating an angle between two wheel bases, not an angle between two wheel tracks as required by the claim.

Claim 4, as amended, describes "comparing the calculated front wheel track to a specified range for the front wheel track and comparing the calculated rear wheel track to a specified range for the rear wheel track." In rejecting the claim, the Examiner indicates that although January does not explicitly teach comparing the wheel tracks, it would have been obvious to do so because January teaches determining angles of the front and rear wheel tracks (Col. 16, lines 25-35). Applicants respectfully disagree. What January

discloses in the cited section is determining front and rear set back **angles**. The angles are not related to the comparison of **distances** of wheel tracks with specifications, as required by claim 4.

Claims 6 and 8, as amended, specify a step of "comparing the calculated right wheel base to a specified range for the right wheel base and comparing the calculated left wheel base to a specified range for the left wheel base." The Office Action correctly admitted that January does not disclose these features. However, the Office Action erred by further indicating that the claimed features are obvious because "using the wheel bases to determine alignment of the right/left wheels would have been conventional (January col. 16, lines 56-61)." Applicants respectfully disagree. January does not teach "a specified range" for the wheel bases. In addition, there is no disclosure of a comparison between the calculated wheel bases and a specified range. Furthermore, the section relied on by the Examiner discloses only using conventional definitions for wheel bases. Nowhere does January "comparing the calculated right wheel base to a specified range for the right wheel base and comparing the calculated left wheel base to a specified range for the left wheel base," as required by claims 6 and 8.

Claim 9 requires "calculating a front center point of the front wheel track; calculating a rear center point of the rear wheel track; defining a line originating from the center point of one of the front and rear wheel tracks and perpendicular thereto and intersecting the other of the front and rear wheel tracks; and calculating an offset distance from the intersection of the line with the other of the front and rear wheel tracks to the center point of the other of the front and wheel tracks." The Office Action admitted that January does not disclose these features. However, the Office Action rejected the claims

anyway by arguing that it would have been obvious to a person of ordinary skill in the art to make the invention because January teaches "calculating a front/rear center points..., and further teaches drawing a line perpendicular with another line through a point (col. 16, lines 25-27)." Applicants respectfully disagree.

In the sections cited by the Examiner, the perpendicular lines are different from those described in claim 9. In addition, the perpendicular lines in January are used to determine set back angles, not "an offset distance from the intersection of the line with the other of the front and rear wheel tracks to the center point of the other of the front and wheel tracks," as required by claim 9.

Claims 11 and 14 describe "calculating a first diagonal, the first diagonal being defined between the locations of the right, front wheel and the left, rear wheel; and calculating a second diagonal, the second diagonal being defined between the locations of left, front wheel and the right, rear wheel." The Examiner agreed that January does not teach calculating a first and second diagonals as described in the claims. However, the Examiner went on rejecting the claims by indicating that it would have been obvious to people skilled in the art without producing any evidence. It is urged that evidence describing calculations of diagonals, as described in claim 11, and calculations of skew angles, as specified in claim 14, be produced. Otherwise, January by itself is not sufficient to support a prima facie case of obviousness. The Examiner should allow the claims to issue.

As discussed above, January fails to disclose limitation feature of the claims. Therefore, January cannot support a prima facie case of obviousness. The Obviousness

rejection is thus untenable and should be withdrawn. Favorable consideration of the claims is respectfully requested.

Claims 19, 20, 22, 24, 25, 27 and 30 contain limitations comparable to those of claims 3, 4, 6, 8, 9, 11, and 14. Thus, the rejection of claims 19, 20, 22, 24, 25, 27 and 30 is traversed based on at least the same reasons as discussed above as well as on their own merits.

CONCLUSION

Therefore, the present application claims subject matter patentable over the references of record and is in condition for allowance. Favorable consideration is respectfully requested. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this

paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

MCDERMOTT, WILL & EMERY

Wei-Chen Chen

Wei-Chen Chen
Recognition Under 37 C.F.R. §10.9(b)

600 13th Street, N.W.
Washington, DC 20005-3096
(202)756-8000 WC:khb
Facsimile: (202)756-8087
Date: October 30, 2002

VERSION WITH MARKINGS SHOWING CHANGES MADE

IN THE SPECIFICATION

Please amend the specification as follows.

At page 6, the second full paragraph:

Targets 118, 120, 122, 124 are mounted on each of the wheels 126, 128, 130, 132 of the motor vehicle, with each target 118, 120, [120] 122, 124 including a target body 134, target elements 136, and an attachment apparatus 138. The attachment apparatus 138 attaches the target 118, 120, [120] 122, 124 to wheel 126, 128, 130, 132. An example of an attachment apparatus is described in U.S. Patent No. 5,024,001, entitled "Wheel Alignment Rim Clamp Claw" issued to Borner et al. on June 18, 1991, incorporated herein by reference. The target elements 136 are positioned on the target body 134. Examples of target bodies 134 and target elements [112] 136 acceptable for use in the invention are described in U.S. Patent No. 5,724,743.

At page 6, the last paragraph:

In operation, once the position determination system 100 has been calibrated using a calibration target (not shown), as described in the incorporated references, a vehicle can be driven onto the rack [133] 140, and, if desired, the vehicle lifted to an appropriate repair elevation. The targets 118, 120, 122, 124, once attached to the wheel rims, are then oriented so that the target elements 136 on the target body 134 face the respective camera 110, 112. The vehicle and model year can then entered into the vision imaging system 102 along with other identifying parameters, such as vehicle VIN number, license number, owner name, etc.

At page 8, the last paragraph, bridging pages 8 and 9:

The information obtained about the wheels 126, 128, 130, 132 can also include a measure of skew. When the figure defined by the wheels 126, 128, 130, 132 is a trapezoid or parallelogram instead of a rectangle, skew is a measure of the difference between the trapezoid or parallelogram with the square. For example, diagonal lines 158, 160 can be respectively drawn between the left, front wheel 126 and the right, rear wheel 132 and between the right, front wheel 130 and the left, rear wheel 128. One measure of skew is the difference between the length of these diagonal lines 158, 160. If, for example, diagonal line 158 is longer than diagonal line 160, the rear wheels 128, 130 are skewed to the right. Conversely, if diagonal line 158 is shorter than diagonal line 160, the rear wheels 128, 130 are skewed to the left. The position determination system 100 can display the length of the diagonal lines 158, 160 and can also compare the diagonal lines 158, 160 to each other. Additionally, the position determination system can compare the length of the diagonal lines to a desired range of lengths for the particular vehicle being measured.

At page 9, the first full paragraph:

Another measure of skew is to compare the skew angles 162a, 162b between the wheel tracks 150, 152 and the diagonal line 158 from the left, front wheel 126 to the right, rear wheel 132 and the skew angles 164a, 164b between the wheel tracks 150, 152 and the diagonal line 160 from the right, front wheel 130 to the left, rear wheel 128. If, for example, skew angles 162a, 162b are smaller than skew angles 164a, 164b, this

indicates that the rear wheels 128, and the front wheels 130 are skewed to the right. Conversely, if skew angles 162a, 162b are larger than skew angles 164a, 164b, the rear wheels 128, and the front wheels 130 are skewed to the left. The position determination system 100 can display the skew angles 162a, 162b, 164a, 164b and can also compare skew the angles 162a, 162b, 164a, 164b to one another. Additionally, the position determination system can compare the skew angles 162a, 162b, 164a, 164b to a desired range of skew angles for the particular vehicle being measured.

IN THE CLAIMS

Please amend claims 3, 4, 6, 8, 9, 11, 12, 15, 19, 20, 22, 24, 25, 27, 28 and 31 as follows.

3. (Once Amended) A method of determining alignment between the wheels of a vehicle using a position determination system, comprising the steps of:

indicating wheel positions on the vehicle with targets;

imaging the targets to obtain locations of the wheel positions;

calculating a front wheel track, the front wheel track being defined between the locations of the two front wheels;

calculating a rear wheel track, the rear wheel track being defined between the locations of the two rear wheels; and

[The method according to claim 2, wherein the step of calculating the relationship between the front and rear wheels includes] comparing an angle between the calculated

front wheel track and the calculated rear track to a specified range for the angle between the calculated front wheel track and the calculated rear track.

4. (Once Amended) A method of determining alignment between the wheels of a vehicle using a position determination system, comprising the steps of:

indicating wheel positions on the vehicle with targets;

imaging the targets to obtain locations of the wheel positions;

calculating a front wheel track, the front wheel track being defined between the locations of the two front wheels;

calculating a rear wheel track, the rear wheel track being defined between the locations of the two rear wheels; and

[The method according to claim 2, wherein the step of calculating the relationship between the front and rear wheels includes] comparing the calculated front wheel track to a specified range for the front wheel track and comparing the calculated rear wheel track to a specified range for the rear wheel track.

6. (Once Amended) A method of determining alignment between the wheels of a vehicle using a position determination system, comprising the steps of:

indicating wheel positions on the vehicle with targets;

imaging the targets to obtain locations of the wheel positions;

calculating a front wheel track, the front wheel track being defined between the locations of the two front wheels;

calculating a rear wheel track, the rear wheel track being defined between the locations of the two rear wheels;

calculating a right wheel base, the right wheel base being defined as the distance of a line passing adjacent a first right wheel and perpendicularly from the wheel track passing through the first right wheel to the wheel track passing through a second right wheel;

calculating a left wheel base, the left wheel base being defined as the distance of a line passing adjacent a first left wheel and perpendicularly from the wheel track passing through the first left wheel to the wheel track passing through a second left wheel; and

[The method according to claim 5, wherein the step of calculating the relationship between the front and rear wheels includes] comparing the calculated right wheel base to a specified range for the right wheel base and comparing the calculated left wheel base to a specified range for the left wheel base.

8. (Once Amended) A method of determining alignment between the wheels of a vehicle using a position determination system, comprising the steps of:

indicating wheel positions on the vehicle with targets;

imaging the targets to obtain locations of the wheel positions;

calculating a right wheel base, the right wheel base being defined between the locations of the two right wheels;

calculating a left wheel base, the left wheel base being defined between the locations of the two left wheels; and

[The method according to claim 7, wherein the step of calculating the relationship between the front and rear wheels includes] comparing the calculated right wheel base to a specified range for the right wheel base and comparing the calculated left wheel base to a specified range for the left wheel base.

9. (Once Amended) A method of determining alignment between the wheels of a vehicle using a position determination system, comprising the steps of:

indicating wheel positions on the vehicle with targets;

imaging the targets to obtain locations of the wheel positions;

calculating a front wheel track, the front wheel track being defined between the locations of the two front wheels;

calculating a rear wheel track, the rear wheel track being defined between the locations of the two rear wheels;

[The method according to claim 2, further comprising the steps of:]

calculating a front center point of the front wheel track;

calculating a rear center point of the rear wheel track;

defining a line originating from the center point of one of the front and rear wheel tracks and perpendicular thereto and intersecting the other of the front and rear wheel tracks; and

calculating an offset distance from the intersection of the line with the other of the front and rear wheel tracks to the center point of the other of the front and rear wheel tracks.

11. (Once Amended) A method of determining alignment between the wheels of a vehicle using a position determination system, comprising the steps of:

indicating wheel positions on the vehicle with targets;

imaging the targets to obtain locations of the wheel positions;

[The method according to claim 1, further comprising the steps of:]

calculating a first diagonal, the first diagonal being defined between the locations of the right, front wheel and the left, rear wheel; and

calculating a second diagonal, the second diagonal being defined between the locations of left, front wheel and the right, rear wheel.

12. (Once Amended) The method according to claim 11, wherein the step of calculating the relationship between the front and rear wheels includes calculating a difference between the first diagonal and the second diagonal and comparing the calculated difference between the first diagonal and the second diagonal to a specified range for the difference between the first diagonal and the second diagonal.

15. (Once Amended) The method according to claim 14, wherein the step of calculating the relationship between the front and rear wheels includes calculating a difference between the first skew angle and the second skew angle and comparing the calculated difference between the first skew angle and the second skew angle to a specified range for the difference between the first skew angle and the second skew angle.

19. (Once Amended) A computer-implemented position determination system for determining alignment between the wheels of a vehicle, comprising:

one or more targets for indicating wheels positions on the vehicle; and

a vision imaging system for imaging the targets to obtain locations of the wheel positions and for calculating a relationship between the front and rear wheels of the vehicle;

wherein the vision imaging system calculates a front wheel track and a rear wheel track with the front wheel track being defined between the locations of the two front wheels and the rear wheel track being defined between the locations of the two rear wheels; and

[The system according to claim 18,] wherein the calculation of the relationship between the front and rear wheels includes comparing an angle between the calculated front wheel track and the calculated rear track to a specified range for the angle between the calculated front wheel track and the calculated rear track.

20. (Once Amended) A computer-implemented position determination system for determining alignment between the wheels of a vehicle, comprising:

one or more targets for indicating wheels positions on the vehicle; and

a vision imaging system for imaging the targets to obtain locations of the wheel positions and for calculating a relationship between the front and rear wheels of the vehicle;

wherein the vision imaging system calculates a front wheel track and a rear wheel track with the front wheel track being defined between the locations of the two front wheels and the rear wheel track being defined between the locations of the two rear wheels; and

[The system according to claim 17,] wherein the calculation of the relationship between the front and rear wheels includes comparing the calculated front wheel track to a specified range for the front wheel track and comparing the calculated rear wheel track to a specified range for the rear wheel track.

22. (Once Amended) A computer-implemented position determination system for determining alignment between the wheels of a vehicle, comprising:

one or more targets for indicating wheels positions on the vehicle; and

a vision imaging system for imaging the targets to obtain locations of the wheel positions and for calculating a relationship between the front and rear wheels of the vehicle;

wherein the vision imaging system calculates a front wheel track and a rear wheel track with the front wheel track being defined between the locations of the two front wheels and the rear wheel track being defined between the locations of the two rear wheels;

wherein the vision imaging system calculates a right wheel base and a left wheel base with the right wheel base being defined as the distance of a line passing adjacent a first of the right wheels and perpendicularly from the wheel track passing through the first right wheel to the wheel track passing through a second of the right wheels and the left wheel base being defined as the distance of a line passing adjacent a first of the left wheels and perpendicularly from the wheel track passing through the first left wheel to the wheel track passing through a second of the left wheels; and

[The system according to claim 21,] wherein the calculation of the relationship between the front and rear wheels includes comparing the calculated right wheel base to a specified range for the right wheel base and comparing the calculated left wheel base to a specified range for the left wheel base.

24. (Once Amended) A computer-implemented position determination system for determining alignment between the wheels of a vehicle, comprising:

one or more targets for indicating wheels positions on the vehicle; and

a vision imaging system for imaging the targets to obtain locations of the wheel positions and for calculating a relationship between the front and rear wheels of the vehicle;

wherein the vision imaging system calculates a right wheel base and a left wheel base with the right wheel base being defined between the locations of the two right wheels and the left wheel base being defined between the locations of the two left wheels; and

[The system according to claim 23,] wherein the calculation of the relationship between the front and rear wheels includes comparing the calculated right wheel base to a specified range for the right wheel base and comparing the calculated left wheel base to a specified range for the left wheel base.

25. (Once Amended)A computer-implemented position determination system for determining alignment between the wheels of a vehicle, comprising:

one or more targets for indicating wheels positions on the vehicle; and

a vision imaging system for imaging the targets to obtain locations of the wheel positions and for calculating a relationship between the front and rear wheels of the vehicle;

wherein the vision imaging system calculates a front wheel track and a rear wheel track with the front wheel track being defined between the locations of the two front

wheels and the rear wheel track being defined between the locations of the two rear wheels; and

[The system according to claim 18,] wherein the vision imaging system:

calculates a front center point of the front wheel track and a rear center point of the rear wheel track;

defines a line originating from the center point of one of the front and rear wheel tracks and perpendicular thereto and intersecting the other of the front and rear wheel tracks; and

calculates an offset distance from the intersection of the line with the other of the front and rear wheel tracks to the center point of the other of the front and rear wheel tracks.

27. (Once Amended) A computer-implemented position determination system for determining alignment between the wheels of a vehicle, comprising:

one or more targets for indicating wheels positions on the vehicle; and

a vision imaging system for imaging the targets to obtain locations of the wheel positions and for calculating a relationship between the front and rear wheels of the vehicle; and

[The system according to claim 17,] wherein the vision imaging system calculates a first diagonal and a second diagonal with the first diagonal being defined between the locations of the right, front wheel and the left, rear wheel and the second diagonal being defined between the locations of left, front wheel and the right, rear wheel.

28. (Once Amended) The system according to claim 27, wherein the calculation of the relationship between the front and rear wheels includes calculating a difference between the first diagonal and the second diagonal and comparing the calculated difference between the first diagonal and the second diagonal to a specified range for the difference between the first diagonal and the second diagonal.

31. (Once Amended) The system according to claim 30, wherein the calculation of the relationship between the front and rear wheels includes calculating a difference between the first skew angle and the second skew angle and comparing the calculated difference between the first skew angle and the second skew angle to a specified range for the difference between the first skew angle and the second skew angle.

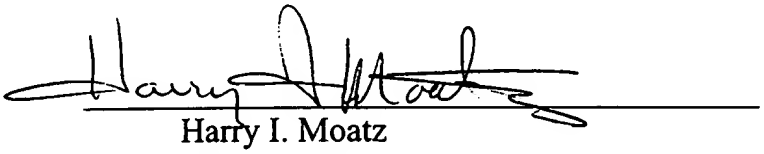
BEFORE THE OFFICE OF ENROLLMENT AND DISCIPLINE
UNITED STATE PATENT AND TRADEMARK OFFICE

LIMITED RECOGNITION UNDER 37 CFR □ 10.9(b)

Wei-Chen Chen is hereby given limited recognition under 37 CFR § 10.9(b) as an employee of McDermott, Will & Emery to prepare and prosecute patent applications wherein the patent applicant is the client of McDermott, Will & Emery, and the attorney or agent of record in the applications is a registered practitioner who is a member of McDermott, Will & Emery. This limited recognition shall expire on the date appearing below, or when whichever of the following events first occurs prior to the date appearing below: (i) Wei-Chen Chen ceases to lawfully reside in the United States, (ii) Wei-Chen Chen□s employment with McDermott, Will & Emery ceases or is terminated, or (iii) Wei-Chen Chen ceases to remain or reside in the United States on an H-1 visa.

This document constitutes proof of such recognition. The original of this document is on file in the Office of Enrollment and Discipline of the U.S. Patent and Trademark Office.

Expires: June 24, 2003



Harry I. Moatz
Director of Enrollment and Discipline